Automated Ammunition Magazine and Projectile Loader System

(AAMPLS)

APRIL 16, 2004

39th Annual Gun & Ammunition Conference

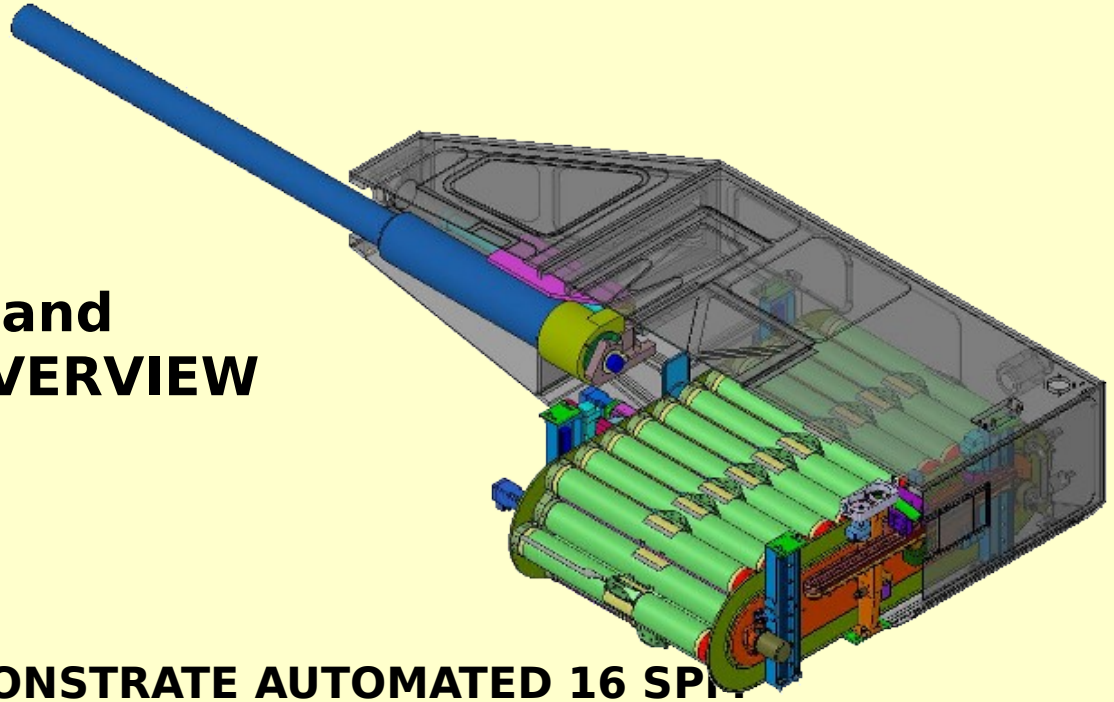
Presented by:

Gregory C. Hill

WESTERN DESIGN

(949) 863-0560

NLOS-M / RAMM TECHNOLOGY DEMONSTRATION
A 120mm MORTAR SYSTEM



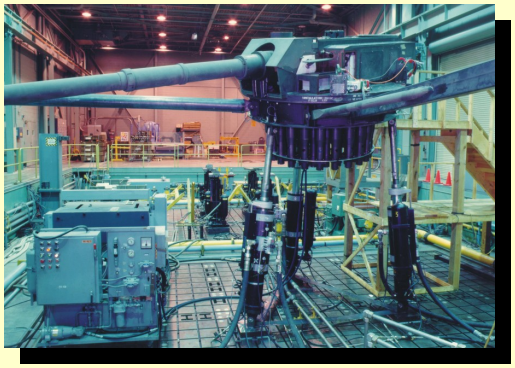
MAGAZINE and AUTOLOADER OVERVIEW

- **OBJECTIVE: DEMONSTRATE AUTOMATED 16 SPM FIRING RATE**
- **SCHEDULE: FEBRUARY 2003 to JUNE 2005**
- **DESIGN: ELEVATING TURRET for SYSTEM SIMPLICITY**

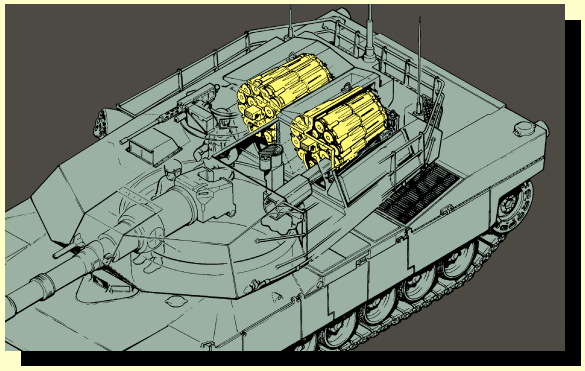
NLOS-M / RAMM TECHNOLOGY DEMONSTRATION
A 120mm MORTAR SYSTEM

DESIGN CONCEPT HISTORY

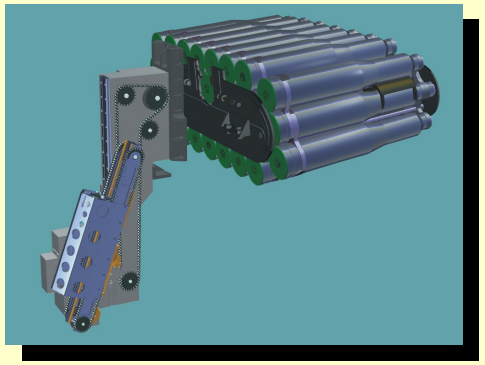
Tank Test Bed



FastDraw



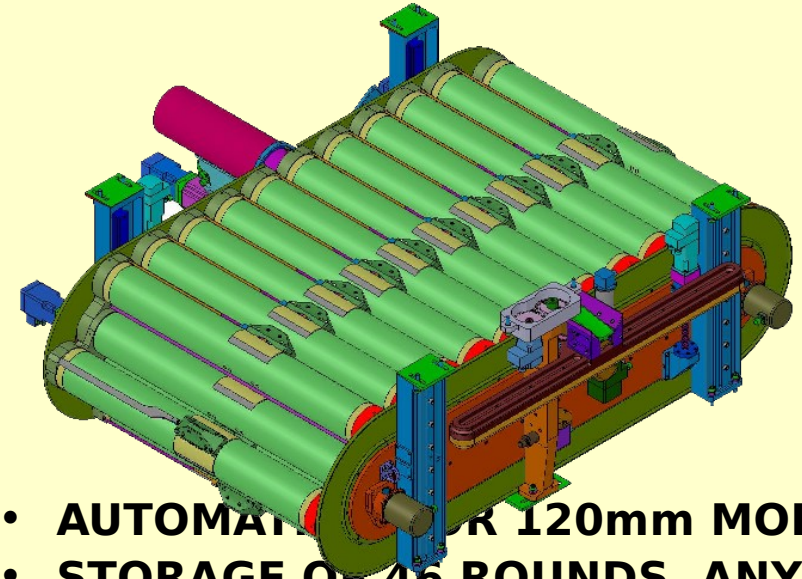
Compact Tank Autoloader

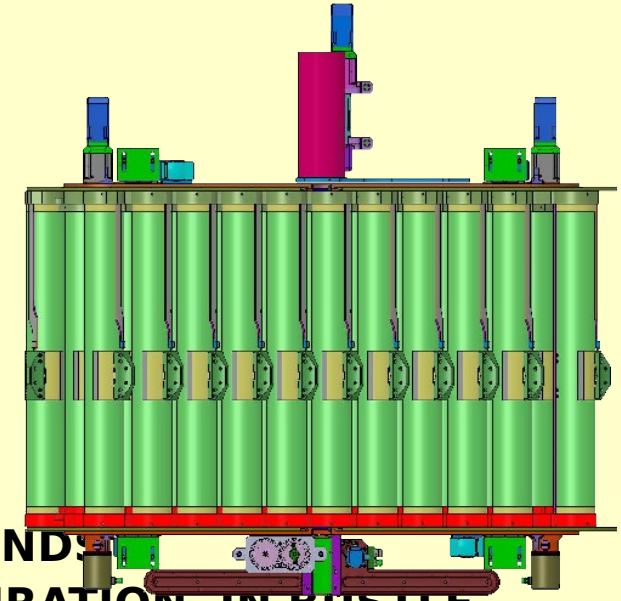


- **FIRST TURRET DEMONSTRATOR: “TANK TEST BED”, 1983**
  - 120mm, 44 ROUNDS IN TURRET, 10 SPM, HYDRAULIC DRIVE
- **“FASTDRAW” MAGAZINE DEMONSTRATOR: 1987**
  - 120mm, 36 AUTOMATED ROUNDS IN BUSTLE, ELECTRIC DRIVE
- **“COMPACT TANK AUTOLOADER” IN TURRET: 1996**
  - 120mm, 34 AUTOMATED ROUNDS IN BUSTLE, 12 SPM, ELECTRIC DRIVE

NLOS-M / RAMM TECHNOLOGY DEMONSTRATION
A 120mm MORTAR SYSTEM

RAMM SYSTEM DESIGN OVERVIEW

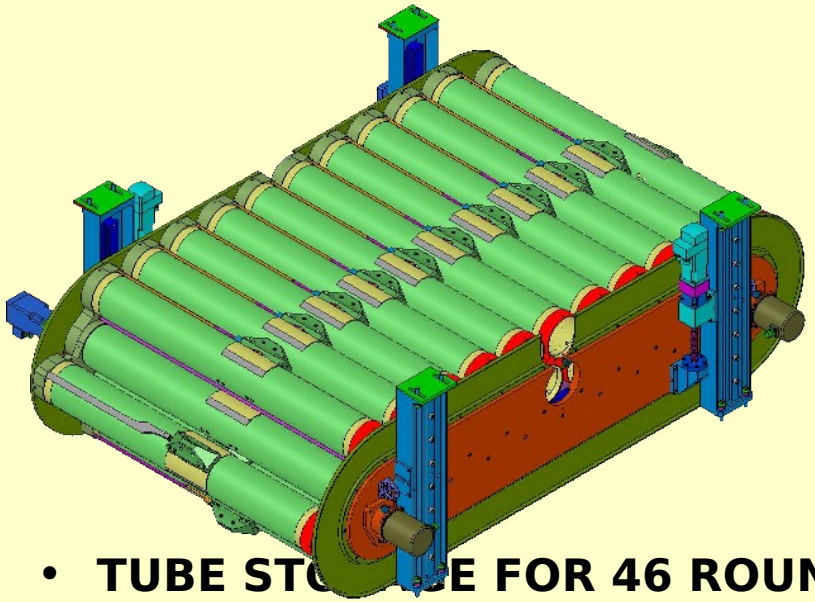


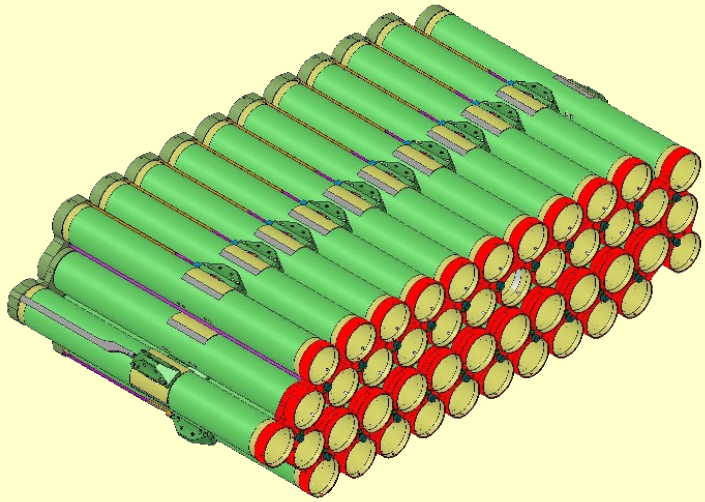


- AUTOMAT[illegible]R 120mm MORTAR ROUND[illegible]
- STORAGE OF 46 ROUNDS, ANY CONFIGURATION, IN BUSTLE
- 16 SHOTS PER MINUTE RATE OF FIRE
- ELECTRIC DRIVE
- COMPUTER CONTROL FROM TOUCH SCREEN

NLOS-M / RAMM TECHNOLOGY DEMONSTRATION
A 120mm MORTAR SYSTEM

RAMM MAGAZINE OPERATION

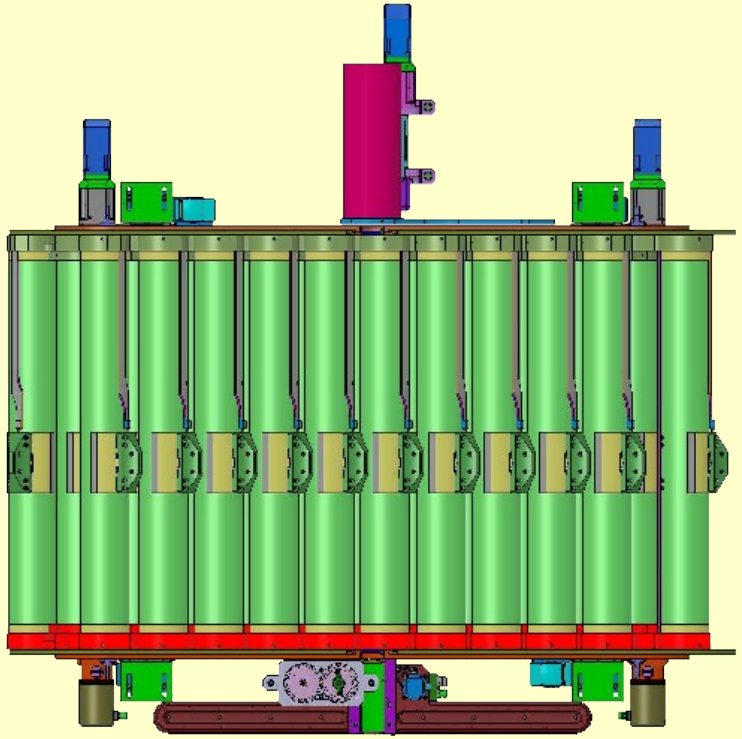




- TUBE STORAGE FOR 46 ROUNDS
- VERTICAL LIFT TO ACCESS TWO ROWS
- TUBES DESIGNED FOR PASS-THROUGH OPERATION
- UPLOAD THROUGH REAR OF BUSTLE
- POSITIVE ROUND CONTROL AT ALL TIMES

NLOS-M / RAMM TECHNOLOGY DEMONSTRATION
A 120mm MORTAR SYSTEM

RAMM AUTOLOADING PROCESS



- **RAMMER ASSEMBLY MOUNTED ON REAR OF MAGAZINE**
  - **STIFF-BACK CHAIN USED TO TRANSFER ROUNDS**
  - **DESIGNED TO UPLOAD AND DOWNLOAD ROUNDS**
- **BRIDGE ASSEMBLY PLACED IN LINE WITH GUN BREECH**
  - **PROVIDES STRAIGHT PATH FOR ROUND TRANSFER**
  - **ACTUATED TO CLEAR GUN RECOIL PATH**

AAMPLS CAPABILITIES
- NLOS-M REQUIREMENT

- 16 ROUNDS PER MINUTE CONTINUOUS RATE OF FIRE
  - 16 to 24 ROUNDS PER MIN. CAPABILITY
  - 8-10 ROUNDS PER MIN. SUSTAINED RATE OF FIRE
- 46 ROUNDS IN DEMONSTRATOR READY MAGAZINE
  - ADDITIONAL ROUNDS IN STATIC RACKS (UP TO 65 ROUNDS)
- LOAD GUN AT ANY ANGLE OF ELEVATION OR AZIMUTH
  - 360 Deg FIELD OF FIRE
  - QUICK RESPONSE TO 'CALL FOR FIRES', PLACEMENT & DISPLACEMENT
  - MULTI ROUND SIMULTANEOUS IMPACT (MRSI), 12 ROUNDS IN 4 SECONDS
- COMPATIBLE WITH CURRENT AND DEVELOPMENTAL ROUNDS (AS UNDERSTOOD AS OF OCT 2003)
  - XM984
  - PGMM
- 1269 LBS. AAMPLS TOTAL SYSTEM WEIGHT

PROGRAM STATUS

- MAGAZINE AND LOADER DEMONSTRATOR HARDWARE IN ASSEMBLY
- RAMMER STIFF-BACK CHAIN TESTS COMPLETE
- FUNCTIONAL DEMONSTRATION AT WD: *MAY 2004*

- TURRET HARDSTAND STRUCTURE IN ASSEMBLY
- GUN BARREL FABRICATION & TESTING IN PROCESS
- INTEGRATION @ ARDEC: *SEPTEMBER 2004*

- COMPLETE LIVE FIRE DEMONSTRATION: *JUNE 2005*